

CLAIMS:

1. A method of making a molded polymeric article, the method comprising:

electroforming a plating onto a first surface of a prototype article, wherein the first surface is defined at least in part by a desired arrangement of fine topography features and is electrically conductive, so that the plating defines an article mold having, on a first portion thereof corresponding to the first surface of the prototype article, a reverse image arrangement of the fine topography features thereon;

separating the prototype article from the article mold;

introducing an polymeric material onto the article mold which flows into and over the reverse image arrangement of fine topography features;

curing the polymeric material; and

separating the cured polymeric material from the article mold to define a molded polymeric article having, on a finished surface corresponding to the first portion of the article mold, a desired arrangement of fine topography features thereon.

2. The method of claim 1, and further comprising:

forming the finished surface of the molded elastomer to have a desired friction-defining characteristic.

3. The method of claim 1 wherein at least a portion of the desired arrangement of fine topography features on the finished surface includes an array of upstanding stems.
4. The method of claim 3 wherein the array of upstanding stems has a density of at least about 3000 stems per square inch.
5. The method of claim 3 wherein the array has a plurality of zones of upstanding stems, and wherein the stems in adjacent zones differ in height.
6. The method of claim 5 wherein the stem height change from one zone to the next is gradual.
7. The method of claim 5 wherein the array if zones of upstanding stems, and wherein the stems in adjacent zones differ in configuration.
8. The method of claim 1 wherein the conductive material is a metallic paint.
9. The method of claim 1 wherein the plating is electroformed to a depth of about 0.30 inches on the prototype article.
10. The method of claim 1, and further comprising:

verifying the electrical conductivity of the coated portions of the prototype article prior to the electroforming step.

11. The method of claim 1, and further comprising:
 defining the first surface of the prototype article to include at least one area having no topography features.
12. The method of claim 11 wherein the one area is generally planar.
13. The method of claim 1 wherein the article mold is defined as two or more separable mold sections, and wherein the separating step includes moving the mold sections apart from each other.
14. A method of making a mold for use in forming a polymeric molded article, the method comprising:
 forming a prototype article having a first surface thereon, the first surface defined at least in part by an array of upstanding stems;
 coating portions of the prototype article, including at least the first surface thereon, with a thin layer of conductive material;
 electroforming a plating onto the coated portions of the prototype article to define an article mold having, on a first portion thereof corresponding to the first surface of the prototype article, an array of upstanding stem cavities therein; and
 separating the prototype article from the article mold.

15. The method of claim 14, and further comprising:
verifying the electrical conductivity of the coated portions of the prototype article prior to the electroforming step.
16. The method of claim 14 wherein the plating is electroformed to a depth of about 0.30 inches on the prototype article.
17. The method of claim 14 and further comprising:
defining the first surface of the prototype article to include at least one area having no stems thereon.
18. The method of claim 17 wherein the one area is generally planar.
19. The method of claim 14 wherein the array has a plurality of zones of upstanding stems, and wherein the stems in adjacent zones differ in height.
20. The method of claim 19 wherein at least one of stem height changes between adjacent zones is gradual.
21. The method of claim 14 wherein the article mold is defined as two or more separable mold sections, and wherein the separating step includes moving the mold sections apart from each other.
22. The method of claim 17 wherein the defining step includes:

initially forming the first surface of the prototype article from a polymeric member having an array of upstanding stems projecting from a base formed integrally with the stems; and

urging a heated pattern mold against the polymeric member to deform selected stems by heat and pressure.

23. The method of claim 22 wherein the selected stems are flattened.
24. The method of claim 22, and further comprising:
defining a desired image texture on the pattern mold.
25. The method of claim 1, and further comprising:

forming the prototype article; and

coating portions of the prototype article, including at least the first surface there, with a thin layer of conductive material.
26. A method of making a mold for use in forming a polymeric molded article, the method comprising:

electroforming a plating onto a first surface of a prototype article, wherein the first surface is defined at least in part by an arrangement of fine topography features and is electrically conductive, so that the plating defines an article mold having, on a first portion thereof corresponding to the first surface of the prototype article, a reverse image arrangement of the fine topography features.

Abstract